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मानक

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Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 3708-11 (2001): Methods of Test for Natural Rubber Latex, Part 11: Determination of Magnesium (Direct Titration Method) [NRL:18] [PCD 13: Rubber and Rubber Products]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

प्राकृतिक रबड़ लैटेक्स की परीक्षण विधियाँ

भाग 11 मैग्नीशियम ज्ञात करना (प्रत्यक्ष अनुमापन विधि)

[एन आर एल:18]

(दूसरा पुनरीक्षण)

Indian Standard

**METHODS OF TEST FOR NATURAL
RUBBER LATEX**

**PART 11 DETERMINATION OF MAGNESIUM (DIRECT TITRATION METHOD)
[NRL:18]**

(Second Revision)

ICS 83.040.10

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

FOREWORD

This Indian Standard (Part 11) (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Rubber Sectional Committee and had been approved by the Petroleum, Coal and Related Products Division Council.

Estimation of magnesium in latex is helpful in assessing the suitability of latex from foam under production. Latices containing high level of magnesium may pose problems in gelation during foam rubber manufacture. First revision of IS 3708 (Part 11) was published in 1986. This version (second revision) direct titration method has been employed to detect the magnesium content.

The concerned committee has decided to prepare common methods of test for natural rubber latex under NRL (Natural Rubber Latex) series, namely, IS 3708 and this will be applicable to all types of natural rubbers latex being produced. The other parts of IS 3708 are given as follows:

- Part 1 Determination of dry rubber content [NRL:1] (*first revision*)
- Part 2 Determination of sludge content [NRL:5] (*first revision*)
- Part 3 Determination of density [NRL:6] (*first revision*)
- Part 4 Determination of total alkalinity [NRL:7] (*first revision*)
- Part 5 Determination of KOH-number [NRL:8] (*first revision*)
- Part 6 Determination of mechanical stability [NRL:9] (*first revision*)
- Part 7 Determination of volatile fatty acid number [NRL:10] (*first revision*)
- Part 8 Determination of total nitrogen [NRL:12] (*first revision*)
- Part 9 Determination of total ash [NRL:16] (*first revision*)
- Part 10 Determination of boric acid [NRL:17] (*first revision*)

The composition of the Committee responsible for formulation of this standard is given in Annex A.

In reporting the results of a test or analysis made in accordance with this standard, if final value, observed or calculated is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

*Indian Standard***METHODS OF TEST FOR NATURAL
RUBBER LATEX****PART 11 DETERMINATION OF MAGNESIUM (DIRECT TITRATION METHOD)
[NRL:18]***(Second Revision)***1 SCOPE**

This standard (Part 11) prescribes a method for determining magnesium in natural rubber latex of *Hevea Brasiliensis* which may also have been submitted to some types of concentration process.

2 OUTLINE OF THE METHOD

The magnesium content in the latex is estimated by the direct titration with EDTA using Eriochrome Black-T as indicator.

3 APPARATUS

3.1 Analytical Balance (sensitivity 0.01 mg).

3.2 Beaker — 500 ml.

3.3 Pipette — 20 ml and 10 ml.

3.4 Burette — 10 ml.

3.5 Conical Flask — 250 ml.

3.6 Glass Rod

4 REAGENTS**4.1 EDTA (0.005M) Solution**

Standard solution of disodium salt of ethylene diamine tetra acetic acid (EDTA) (0.005 M). Dissolve 1.860 g of EDTA salt in water and make up to one litre.

4.2 Standard Magnesium Sulphate Solution (0.005 M)

Transfer 1.232 4 g of magnesium sulphate ($\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$) in to a 1 000 ml volumetric flask through a funnel. Dissolve the magnesium sulphate in distilled water and make up to the mark.

4.3 Eriochrome Black-T Indicator

Grind together 0.2 gm of Eriochrome Black-T (Solochrome Black-T) with 50 g of potassium chloride or sodium chloride in a porcelain mortar till homogeneous.

4.4 Buffer Solution (pH-10)

Add 142 ml of concentrated ammonia solution (sp gr 0.88-0.90) to 17.5 granular grade ammonium chloride and dilute to 250 ml with distilled water.

4.5 Potassium Cyanide Solution (4 percent *m/v*) in water.

4.6 Hydroxyl Amine Hydrochloride Solution (5 percent *m/v*) in water.

5 PROCEDURE**5.1 Standardization of EDTA Solution**

Titrate EDTA solution with standard magnesium sulphate solution and find out its strength.

5.1.1 Pipette 20 ml of standard magnesium sulphate solution into a 250 ml conical flask, dilute it to 50 ml distilled water, add 2 ml of buffer solution and a pinch of Eriochrome Black-T indicator. Then titrate with the EDTA from a burette with continuous shaking. The end point is the colour change from wine red to blue.

5.2 Estimation of Magnesium

Accurately weigh about 5 g of latex into a 100 ml volumetric flask and make up to the mark with distilled water. Pipette out 20 ml of latex solution into a 500 ml beaker containing around 350 ml distilled water. Add 2 ml hydroxyl amine hydrochloride solution and 2 ml potassium cyanide solution stirr well and then add 10 ml buffer solution followed by a pinch of Eriochrome Black-T indicator. Stirr well titrate this against 0.005 M EDTA from a burette. The end point is the colour change from wine red to a permanent blue colour.

6 CALCULATION

6.1 Calculate the magnesium content (as Mg) in the latex as follows:

$$\text{Magnesium (as Mg), percentage by mass of latex} = \frac{V \times M \times 12.16}{m}$$

where

V = volume in ml of EDTA solution,

M = molarity of the EDTA solution, and

m = mass in g of the latex taken for the test.

ANNEX A

(Foreword)

COMMITTEE COMPOSITION

Rubber Sectional Committee, PCD 14

<i>Organization</i>	<i>Representative(s)</i>
Polym Consultants, New Delhi	DR S. N. CHAKRAVARTY (<i>Chairman</i>)
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SHRI R. P. MISHRA

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Method of Testing Subcommittee, PCD 14:1

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